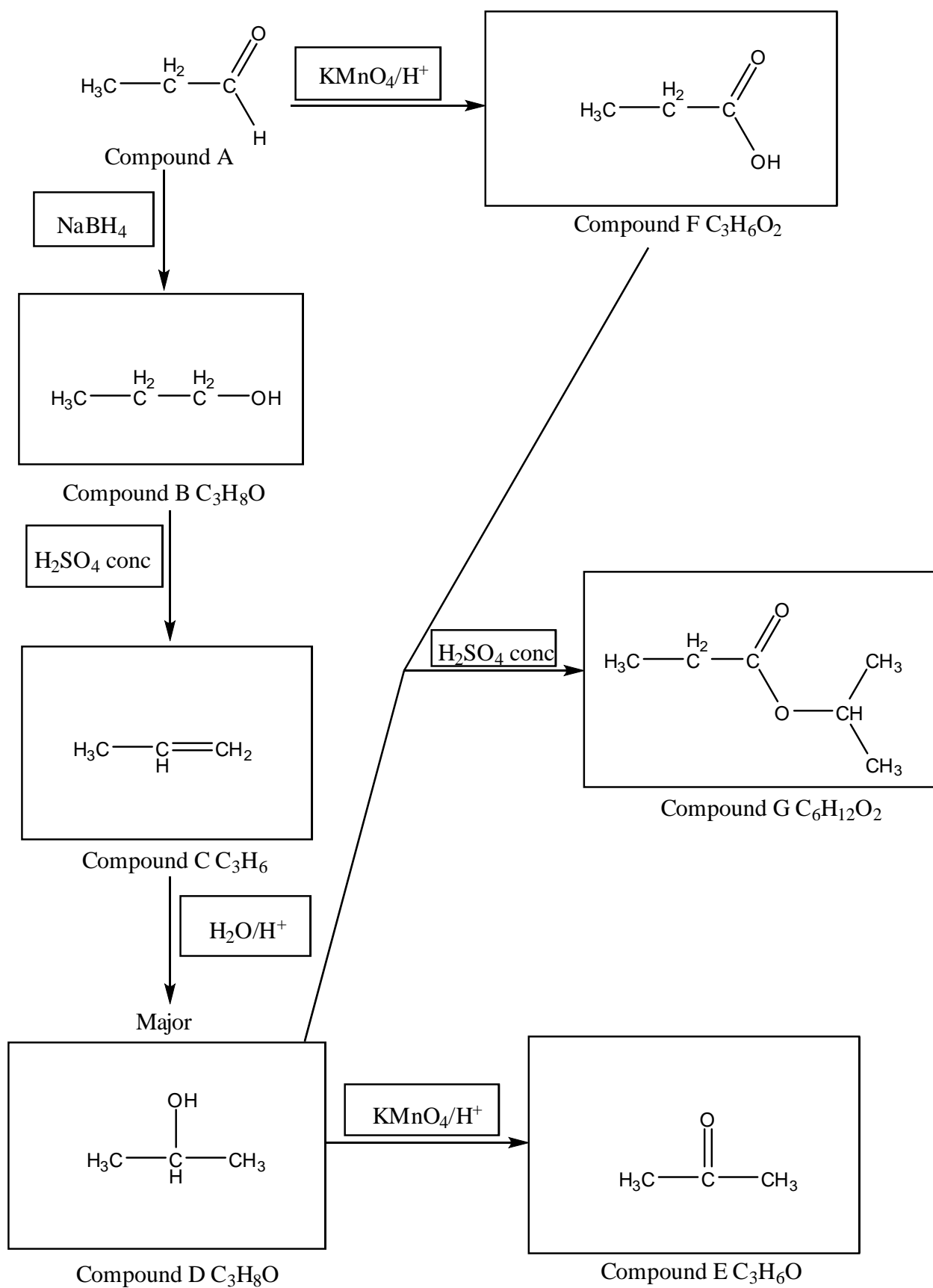


**Question One-** Complete the reaction scheme



## Question Two

Complete the table below, Compound A as an example

	Name	MS m/z	Isotope peak?	Number of <sup>13</sup> C peaks and region	IR Functional group and peaks
A	Propanal	58	none	3 carbon environments ~190 – 200 ppm ( <u>C</u> =O) ~20 – 30 ppm ( <u>C</u> -C=O) ~10 – 15 ppm ( <u>C</u> -R)	C-H 3100 – 2800 cm <sup>-1</sup> C=O 1850 – 1600 cm <sup>-1</sup>
B	Propan-1-ol	60	none	3 carbon environments ~50 – 65 ppm ( <u>C</u> -OH) ~20 – 30 ppm ( <u>C</u> -CO) ~10 – 15 ppm ( <u>C</u> -R)	C-H 3100 – 2800 cm <sup>-1</sup> C-O 1250 – 1050 cm <sup>-1</sup> -OH 3700 – 3200 cm <sup>-1</sup>
C	Propene	42	none	3 carbon environments ~115 – 140 ppm (C=C) ~10 – 15 ppm (C-R)	C-H 3100 – 2800 cm <sup>-1</sup> C=C 1680 – 1600 cm <sup>-1</sup>
D	Propan-2-ol	60	none	2 carbon environments ~50 – 65 ppm ( <u>C</u> -OH) ~20 – 30 ppm ( <u>C</u> -CO)	C-H 3100 – 2800 cm <sup>-1</sup> C-O 1250 – 1050 cm <sup>-1</sup> -OH 3700 – 3200 cm <sup>-1</sup>
E	Propanone	58	none	2 carbon environments ~190 – 200 ppm ( <u>C</u> =O) ~20 – 30 ppm ( <u>C</u> -C=O)	C-H 3100 – 2800 cm <sup>-1</sup> C=O 1850 – 1600 cm <sup>-1</sup>
F	Propanoic acid	74	none	3 carbon environments ~170 – 185 ppm (C=O) ~20 – 30 ppm ( <u>C</u> -C=O) ~10 – 15 ppm ( <u>C</u> -R)	C-H 3100 – 2800 cm <sup>-1</sup> C=O 1850 – 1600 cm <sup>-1</sup> C-O 1250 – 1050 cm <sup>-1</sup> OH 3600 – 2500 cm <sup>-1</sup>
G	Propyl propanoate	116	none	5 carbon environments ~170 – 185 ppm (C=O) ~20 – 30 ppm ( <u>C</u> -C=O) ~10 – 15 ppm ( <u>C</u> -R) ~50 – 65 ppm ( <u>C</u> -O)	C-H 3100 – 2800 cm <sup>-1</sup> C=O 1850 – 1600 cm <sup>-1</sup> C-O 1250 – 1050 cm <sup>-1</sup>